

Blemishes and Growths

the exact power setting required for each individual case cannot be predetermined accurately. Only experience and familiarity with the apparatus will enable the operator to correctly preset the power. Meat experiments are helpful in deciding on approximate power settings.

These same general principles apply in removing growths and blemishes in any accessible location. For example, papillomata and other benign growths on the vocal cords may be coagulated and allowed to slough. Perfect results without functional impairment have been secured.

Again it may be well to repeat that any accessible growth or mass of tissue can be easily and readily removed by these methods.

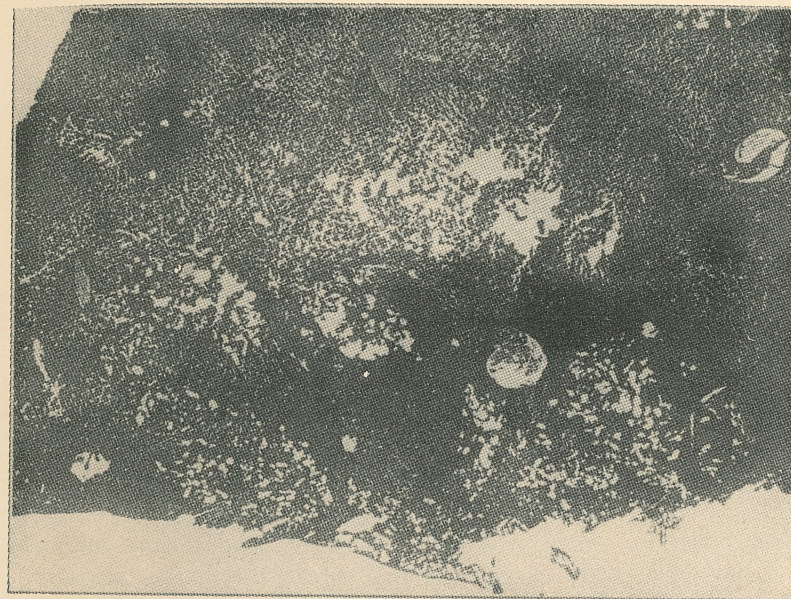
ABORTING BOILS

In the incipient stage, furuncles can be sterilized before they have developed to the necrotic point by inserting a small needle into the center of the abscess and briefly applying moderately high power coagulation current. Extensive coagulation of tissue is not necessary - a quick flash of the current destroys the central point of infection and the abscess disappears by absorption. This technique has proven a boon to patients suffering with chronic furunculosis as by presenting themselves for treatment while the boil is in an early stage, they will save pain, and necessity for later lancing is eliminated.

DESTRUCTION OF LESIONS WITH ELECTRO-COAGULATION AND DESICCATION

BRIEFLY, electro-coagulation and desiccation afford means for destroying in situ any accessible mass of tissue. It is equally applicable to either large or minute growths. The process is absolutely accurate, easily controlled and simple to apply.

The heat, generated within the tissues, is sufficient to dry out the tissue cells, resulting in their death. Under the microscope a section of the tissue so treated will show the cells to be shrunken and shrivelled and their nuclei condensed, the whole presenting a mummified appearance.



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*Photomicrograph of a Cat's Liver after four seconds' contact application of coagulating current. The absence of molecular dissolution in the middle of the surface is due to the adhesion of this zone to the electrode. Radial penetration of detectable histologic alteration is 2.8 mm. The shrinkage of the coagulum has freed some of the altered cells into a lake of plasma underneath it.**

Macroscopically the treated tissue presents a greyish white, dried out and shrivelled appearance. The necrotic tissue eventually separates and the destroyed cells are replaced by connective tissue. Since this mode of cell destruction is associated with very little

degenerative changes in adjacent healthy cells, there is a minimum of fibrous tissue as an end result. Scarring is soft and supple.

Thus these methods are extremely useful where good cosmetic results are essential, as in removing common skin blemishes; or where hard scar tissue might result in functional impairment; as in working on the vocal cords, in the urethra or rectum.

Among the more common conditions where electro-coagulation or desiccation may be used to advantage are, pigmented nevi, telangiectases, leukoplakias, warts, etc. The precancerous dermatoses, including the various forms of keratoses, papillomata, x-ray dermatitis, lupus vulgaris and erythematosis, and other lesions of the skin and mucous membranes can be destroyed readily by this method.

Localized benign growths of the larynx, bladder or rectum; minor gynecological conditions such as cervical erosions and urethral caruncle; any accessible malignancy if not too extensive; these are conditions indicating removal by electro-coagulation or desiccation.

In recent years many specialized uses such as sealing bleeders in major surgery, shrinking inferior turbinates, electro-coagulation of tonsils, removing hemorrhoids, etc., have attracted considerable attention and are now widely used.

SKIN BLEMISHES AND OTHER BENIGN GROWTHS

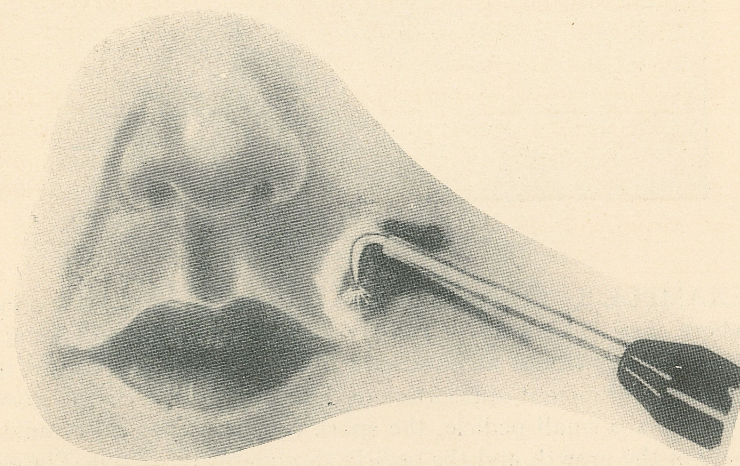
WE will not attempt to describe the technique in detail for every condition that might be encountered. The various methods will be covered and cases selected to illustrate the general procedure.

Growths and blemishes, depending on their nature, size, location and whether or not an anesthetic is to be used will be removed by one of three methods:

1. *Monopolar desiccation*, for limited superficial destruction, as in small nevi, small pedunculated warts, small patches of leukoplakia, telangiectasis, small papillomata, etc. Power should be set to produce a spark about 1-16 inch long. This is correct for the average case. Less power may be used on very small growths, or where it is desired to work slowly and limit the pain felt by the patient.

2. *Bipolar coagulation* with the active electrode contacted superficially. Useful in destroying growths of moderate depth but of large area. Power required will vary, depending on the size of the electrode and depth of destruction desired.
3. *Deep bipolar coagulation* with the electrode inserted into the tissue to any required depth; used in destroying massive growths. Power required depends on size of needle, depth inserted and amount of destruction required.

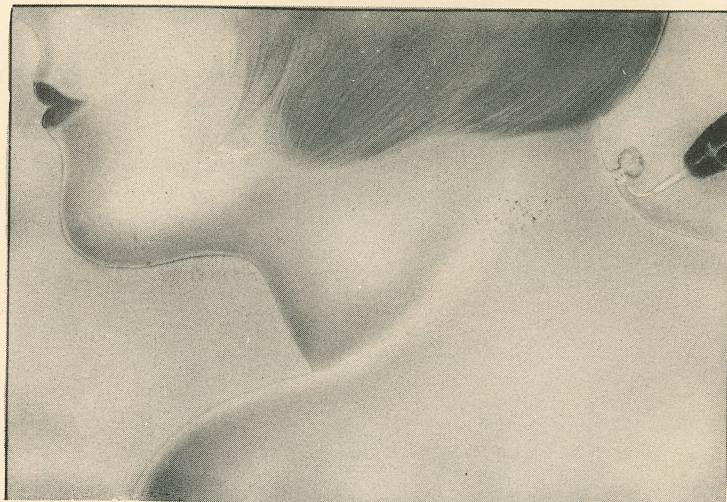
Typical examples of these different methods are illustrated.



Example A

EXAMPLE A — Small purely superficial blemishes such as patches of leukoplakia, telangiectasis or x-ray dermatitis may be readily destroyed by monopolar desiccation without anesthetic. Sparks about 1-16" long are applied intermittently — in very short flashes — until the entire patch has been covered. The blanched and dried-

out appearance of the surface indicates superficial destruction. The dried-out tissues separate; a scab forms and healthy connective tissue grows below.



Example B

EXAMPLE B — Very small warts or nevi, or even larger growths where they have a small pedicle, can be removed by monopolar desiccation, without an anesthetic. The entire growth can be dried out by intermittent application of the spark. In the case of growths that have a small pedicle, the spark can be played all around the base of the growth and the pedicle thoroughly dried out. The entire growth will subsequently slough away.

EXAMPLE C — Fairly extensive blemishes such as nevi and angiomas can be removed by bipolar coagulation by actually contacting a ball electrode and brushing it over the surface to be destroyed. In this case a fairly intense heat is generated in the growth and an anesthetic will be required. The ball electrode should be "brushed" slowly over the growth until the entire surface is blanched. The amount of power needed depends on the size of the electrode, the speed of moving it over the surface and the depth of destruction desired.



Example C

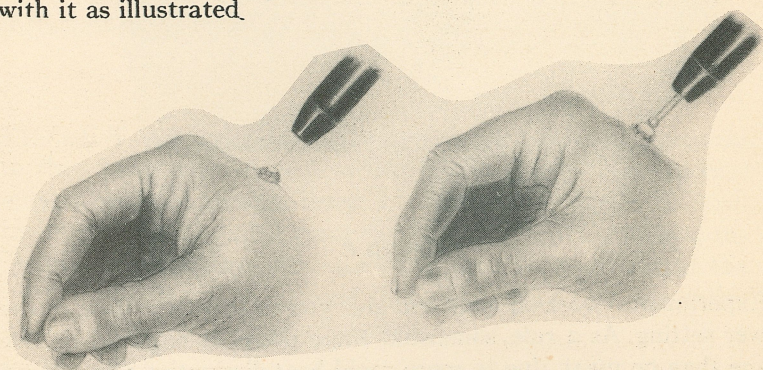
Experimental work on meat will give you an approximation of the power setting. As a rule, somewhat more power is required on live tissue than on meat, due to more rapid heat dissipation when blood circulation is present. If such growths are very large, they may be removed in two or more stages with a consequent reduction in pain and reaction. In the case of pigmented growths it is well to work slightly beyond the limit of the pigmentation to assure all discolored cells being destroyed.

EXAMPLE D — Fairly large growths of any nature can be removed by deep bipolar coagulation, as illustrated on page 29. Local

or general anesthetic will be required. In the case of large growths, multiple needle punctures are necessary to destroy the entire mass. If you will set the power control so as to get the ring of blanched tissue around the needle in from two to three seconds, it will assure only a moderate depth of penetration beyond the needle point and very accurate control over the amount of tissue destroyed.

With the apparatus set to produce the ring of blanched tissue around the needle in two or three seconds, you will get about the same depth of destruction beyond the needle point as at the sides of the needle. Different punctures should be made until the entire growth has been covered. If desired, the coagulated mass can be cut or curetted away immediately after it is coagulated. This may be desirable if the growth is very large but if it is a smaller growth, we suggest that the coagulum be allowed to remain in place as it acts as a protection for the healthy tissues which immediately start growing up from below.

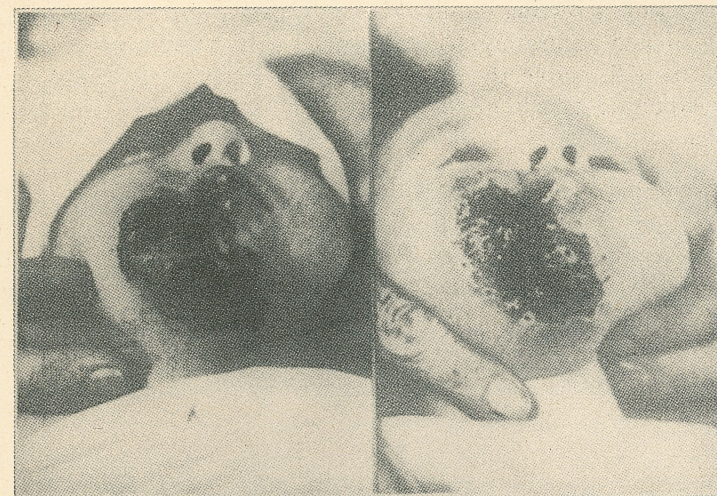
Small growths can also be destroyed by bipolar coagulation by inserting a needle into the growth or by making a superficial contact with it as illustrated



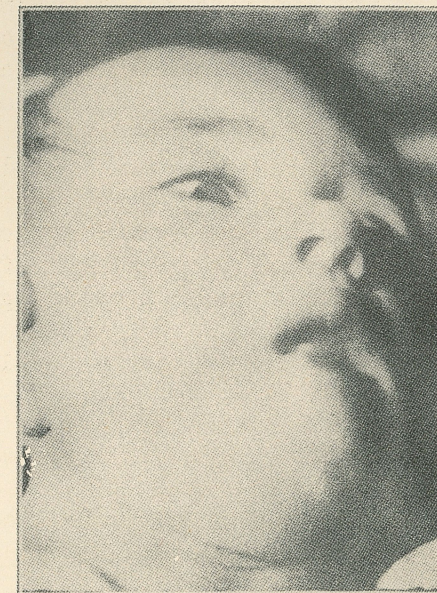
Electro-Coagulation of small growth by inserting needle Destroying small growth by contacting tissue with ball electrode

The disadvantage of this method is that the action of the current is rapid, considerable heat is generated and an anesthetic would ordinarily be necessary.

The above are merely examples of how the current may be used in dealing with ordinary blemishes and growths. As previously stated,



**"The above pictures show the method used by Dr. Charles F. Bowen of Columbus, Ohio, in removing birth marks. The second picture shows the appearance immediately following the operation. Instead of covering the entire birth mark, a series of punctures were made about one quarter of an inch apart. The needle was inserted about one quarter of an inch and the current turned on momentarily until the tissue immediately surrounding the needle lighted up. The picture below shows the result six weeks later, with practically no scarring, and with the treated area being the same color as the surrounding skin. It is important not to over-do which will result in the treated area being whiter than the surrounding tissue."*



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